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| Number BAW 15-046/01/C Replaces: - |   <p style="text-align: center;">BDA Agrément® BAW 15-046/01/C</p> <p style="text-align: center;">Document linked with Kiwa Certificate KGaC 2006 GB, issued by Kiwa Ltd., Derby, UK</p> | Category Timber frame and masonry external cavity walls |
| Date 2015.09.04 | | Phase Assessment |
| Project number 14-B-0308/2 | | Subject Multi-foil reflective thermal insulation |
| Product Producer (Certificate holder) Description Scope (use) Summary of certificate Major points of assessment Statement | <p>ThermaQuilt</p> <p>Yorkshire Building Services (Whitwell) Ltd. The Craggs Industrial Park Morven Street Creswell Derbyshire S80 4AJ UK</p> <p>T. : +44 (0) 1909 721662 F. : +44 (0) 1909 721442 I. : www.ybsinsulation.com E. : technical@ybsinsulation.com</p> <p>Multi-layered wall insulation material made up of nine layers of metallic foil and flexible wadding. The layers are spot wise connected by double T plastic clips in a regular pattern, avoiding thermal bridging and creating flat and parallel surfaces (Product Type 1 according BS EN 16012¹¹). The first and outer layer consist of metalized polyethylene foil with backing and reinforcing scrim. The core of the product consists of layers of polyester fibre wadding, separated by metallized film layers. The product is not an underlay.</p> <p>Thermal insulation for use on the inside of timber frame, dry lining and masonry external cavity walls, as well as external wall applications of dwellings and buildings with similar temperature and humidity conditions, designed and constructed in accordance with the relevant clauses of BS 5268² and BS 5628³.</p> <p>This Certificate covers the following:</p> <ul style="list-style-type: none"> • Conditions of use • Frame of reference, including relevant codes of practice and test reports • Independently verified product characteristics • Factory Production Control • Annual verification procedure • Points of attention for the specifier and specific details • Installation procedure • Compliance with Building Regulations and NHBC Standards <p>Thermal performance aspects (sections 1.2, 8.2 & 8.3) The basic property of ThermaQuilt concerns the thermal performance. Kiwa BDA Testing has assessed the thermal performance of the product according BS EN ISO 6946 and BR443. The product can contribute substantially in meeting the U-value requirements for timber frame, dry lining and masonry external cavity walls, as well as external wall applications.</p> <p>Condensation and water penetration risk (section 8.4) The performance of ThermaQuilt with regard to interstitial condensation, surface condensation and water penetration has been considered.</p> <p>Behaviour in relation to fire (section 8.5) An insulated timber frame, dry lining, masonry external cavity wall or external wall insulation system using ThermaQuilt can be designed to meet the UK requirements.</p> <p>Durability (section 8.6) ThermaQuilt is stable, rot-proof and durable and will remain effective as an insulant for the life of the building in which it is installed.</p> <p>It is the opinion of the Kiwa BDA Expert Centre Building Envelope (ECBE) that ThermaQuilt is fit for its intended use, provided it is specified, installed and used in accordance with this Certificate.</p> <p>Professor Nico Hendriks, MSc</p>  <p>ECBE Chairman</p> <p>Authorization: Chris van der Meijden, MSc</p>  <p>BDA Group Technical Director</p> <p style="text-align: center;">To check the validity of this document please consult www.bda.nl</p> | |
| Version 01 | <p style="text-align: center;">Kiwa BDA Expert Centre Building Envelope (ECBE)</p> <p>BDA Group Avelingen West 33 P.O. Box 389 4200 AJ Gorinchem, The Netherlands +31 (0)183 66 96 90</p> <p>Kiwa Ltd. Unit 5 Prime Park Way Prime Enterprise Park Derby, DE1 3QB, United Kingdom +44 (0)7718 57 05 64</p> <p style="text-align: center;">Copyright© 2015 Kiwa BDA www.kiwa.co.uk/bda</p> | Page 1 of 8 pages |

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| <p>1 Conditions of use</p> | <p>1 Application The assessment and certification of ThermaQuilt relate to the use of the product in dwellings and buildings with similar temperature and humidity conditions with either correctly installed masonry and/or timber frame and/or discontinuous weather resistant cladding on external cavity or solid walls, which have been designed and constructed in accordance with the relevant clauses of BS 5268² and BS 5628³. ThermaQuilt shall not be exposed to organic solvents or plasticisers.</p> <p>2 Assessment Kiwa BDA Testing*) has assessed the thermal performance of the product according BS -EN 16012 (BS EN 12667: 2001). The hemispherical emissivity has been assessed according BS EN 16012, Annex D and the characteristic properties according BS EN 823, BS EN 1848-2, BS EN 1602, 1604 and 1608, BS EN 12310-1 and BS EN ISO 12572.) CPR Notified Laboratory Nr. NB 1640; Testing Accreditation RvA L 447 (acknowledged by UKAS)</p> <p>3 Installation It is recommended that the quality of installation and workmanship is controlled by an independent competent inspector. This inspector can be either a qualified employee of the specifier or a qualified employee of a consulting engineer. The product shall be installed strictly in accordance with the instructions of the Certificate holder and the requirements of this Certificate.</p> <p>4 Geographical scope The validity of this document is limited to England, Wales, Scotland and Northern Ireland, with due regard to section 11. Regulations.</p> <p>5 Validity The purpose of this BDA Agrément® is to provide for well-founded confidence to apply ThermaQuilt in the described applications and according to approved specifications. According to the BDA Guideline - BDA Agrément®¹ the validity of this document is therefore three years after the official date of issue, published on www.bda.nl. After this the validity can be extended every three years after positive review.</p> |
| <p>2 Frame of reference</p> | <ol style="list-style-type: none"> 1 BDA Guideline - BDA Agrément®, 30th June 2015 2 BS 5268-2:2002 Structural Use of Timber. Code of Practice for Permissible Stress Design, Materials and Workmanship 3 BS 5628 Part 3:2001 Code of practice for the use of masonry: materials and components, design and workmanship 4 BS 5250:2011 Code of practice for control of condensation in buildings 5 BS EN ISO 6946: 2007 Building components and building elements -Thermal resistance and thermal transmittance - Calculation method 6 BR443: Conventions for U-value calculations, 2006 edition, BRE Scotland 7 BDA Report 0156-C-14/4 ThermaQuilt: Determination of product characteristics (initial type testing), 2015.01.29 8 BDA Agrément® + Kiwa Certificate BAW 12-010/01/C, 2012.12.17 9 BDA-Kiwa report: Technical Documentation, containing information to demonstrate the conformity of the product to the applicable requirements of BDA Agrément® + Kiwa Certificate BAW 12-010/01/C 10 BBA Information Bulletin No. 3: Reflective foil Insulation - Conventions for U-value calculations, March 2010 11 BS EN 16012: 2012 Thermal insulation for buildings - Reflective insulation product - Determination of the declared thermal performance 12 NHBC Standards, Chapter 1, Technical Requirement R3, Chapter 2.3 Timber preservation (natural solid timber), Chapter 6.1 External masonry walls and Chapter 6.2 External Timber Frame Walls 13 Kiwa Guideline K22005, 15th January 2015 14 Kiwa Certificate KGaC 2006 GB, 2012.07.25, Kiwa Ltd., Cheltenham, UK 15 BDA Report 14-B-0308/3 ThermaQuilt: Calculation of 90/90 values of the emissivity, 2015.02.09 16 Kiwa BDA Report 0156-L-14/1 ThermaQuilt: Determination of thermal resistance, 2014.07.16 17 BDA Report 14-B-0308/1 ThermaQuilt: Calculation of 90/90 values of the core, 2014.06.30 18 BS 5268-5: 1989 Structural use of timber - Code of practice for the preservative treatment of structural timber 19 BS 8212: 1995 Code of practice for dry lining and partitioning using gypsum plasterboard 20 BS EN 13914-1: 2005 Design, preparation and application of external rendering and internal plastering. External rendering <p>Remark: in the text of this document reference is made to these sources by adding the relevant reference number in superscript</p> |
| <p>3 Independently verified product characteristics related to critical functions*)</p> | <p>*) The critical functions which apply to this section are the behaviour in relation to thermal insulation and durability, as mentioned in R3(a) of the NHBC Standards¹²</p> <ul style="list-style-type: none"> • nominal length : 10.00, 6.667 (m) • nominal width : 1200 (mm) • nominal thickness : 35 (mm) • nominal mass : 0.70 (kg.m⁻²) • thermal performance core R_{90/90}¹⁷ : 0.775 (m².K.W⁻¹) • emission coefficients of outer surfaces, ε_{90/90}¹⁵ : 0.05 (-) • dimensional stability (length)⁸ : 1.5 (%) • dimensional stability (width)⁸ : 2.3 (%) • tensile strength parallel to faces⁸ : 142 (kPa) • tearing resistance (nail shank)⁷ : 408 (N) • water vapour diffusion factor μ (with seam)⁸ : 1700 (-) • water vapour diffusion factor μ (without seam)⁸ : 75000 (-) |
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| <p>4 Assessed ancillary items and associated products used for critical functions^{*)} *) See section 3</p> | <ul style="list-style-type: none"> • YBS Insulation foil-backed tape with acrylic adhesive, width 75 mm • 14 mm staples or nails • spider clips • vapour control layer • breather membrane • pre-treated counter battens and softwood battens • additional insulation where required |
| <p>5 Factory Production Control (FPC)</p> | <p>Kiwa N.V., Approval Body, has determined that Yorkshire Building Services (Whitwell) Ltd. (YBS), with respect to the product ThermaQuilt fulfills all provisions concerning the specifications described in this Certificate. The Factory Production Control has been found to comply with the Kiwa Guideline K22005¹³ and this Certificate. The Factory Production Control system of YBS is in line with the Technical Documentation from the producer⁸. Kiwa Ltd. has performed the initial inspection of the factory and of the Factory Production Control and performs the continuous surveillance of the Factory Production Control¹⁴.</p> |
| <p>6 Quality control</p> | <p>ThermaQuilt is produced under a Quality Management System, which is deemed to satisfy the requirements concerning the FPC. The quality system enables the Certificate holder to demonstrate that the product fulfils the requirements of this Certificate. This means that the following aspects are covered:</p> <ul style="list-style-type: none"> • the quality objectives, quality planning, quality manual and control of documents must fully take on board the objective of delivering a product that conforms to the specifications in this Certificate; • the manufacturer must identify and document the essential requirements that are relevant for the product and the harmonised standards to be used or other technical solutions that will ensure fulfilment of the specifications in this Certificate; • the identified standards or other technical solutions must be used as design input, and as verification that design output as given in a continuous technical consulting service ensures that the specifications in this Certificate will be met; • the measures taken by the Certificate holder to control production must ensure that the products conform to the identified safety requirements; • the Certificate holder in its measurement and control of the production process and finished products must identify and use methods which are identified in standards or other appropriate; • methods to ensure that the specifications in this Certificate are met; and • quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned, must be suitable to ensure the fulfilment of the applicable specifications in this Certificate. |
| <p>7 Annual verification procedure</p> | <p>In order to demonstrate that the FPC is in conformity with the requirements of the technical specification described in this Certificate the continuous surveillance, assessment and approval of the FPC will be done in a frequency of not less than 1 time per year by Kiwa Ltd. For the purpose of the annual assessment a sample of the product (1 roll) will be independently taken at the production site. The annual assessment will concern the following product characteristics, which will be determined and assessed by BDA and Kiwa Ltd.:</p> <ul style="list-style-type: none"> • Thickness BS EN 823:1995 • Width BS EN 1848-2:2001 • Length BS EN 1848-2:2001 • Mass BS EN 1602:1997 • Thermal resistance of core BS EN 16012:2012, method B (BS EN 12667: 2001) • Hemispherical emissivity of reflective foil faces BS EN 16012:2012, Annex D <p>Remark: If at the time of the verification testing a new version of a mentioned Test Standard has been issued, the newer version shall prevail</p> |
| <p>8 Points of attention for the specifier</p> | <ol style="list-style-type: none"> 1 The product is delivered in rolls packed in a protective sealed bag and should include product name, dimensions, the BDA identification mark and the number of this Certificate. 2 Wall insulation <ul style="list-style-type: none"> - special attention should be given to the air tightness of the internal lining, being the most important measure to avoid excessive condensation in the space behind the insulation; if ventilation has been provided in the external cavity, there is no requirement for a vapour control layer behind the internal lining, provided that the ThermaQuilt layer is thoroughly sealed at all joints, resulting in an airtight layer; - the building physical behaviour of wall constructions incorporating the insulation must be analysed by a specialist; the specialist can be either a qualified employee of the specifier, a qualified consultant or qualified employee of the Certificate holder. The qualified person will check the building physical behaviour of the designed wall construction and if need be, advice about improvement to achieve final specification; - if ventilation openings (not greater than allowed for a 'non-ventilated air cavity' according BS EN ISO 6946⁵) are used they should be positioned at the top and bottom of the external lining in accordance with BS 5250⁴; - ventilation openings should be arranged in such a way that blockage is prevented and also the ingress of rain, snow, birds and small mammals. |
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8 Points of attention for the specifier
(continued)

3 Thermal performance aspects

- for the purpose of U-value calculations to determine if the requirements of the Building (or other statutory) Regulations are met, the thermal resistance of the product in combination with a non-ventilated air cavity on both sides of the SuperQuilt layer of nominal 20 mm or 13 mm (to be achieved as shown in Figures 1, 2, 3 and 4 in section 9 of this Certificate) is to be calculated according to BS EN ISO 6946⁵ and/or BR443⁶, the thermal bridging effect has to be assessed according to BBA Information Bulletin No. 3¹²;
- the requirement for limiting the heat loss through the building fabric, including the effect of thermal bridging can be satisfied if the U-values of the building elements do not exceed the maximum values in the relevant Elemental Methods given in the National Building Regulations of England and Wales (Approved Documents L), Scotland (Technical Standards Regulations 9) and Northern Ireland (Technical Booklet F); further information on regulations is given in section 11 of this Certificate.

4 Condensation risk

- walls incorporating the product will adequately limit the risk of interstitial condensation when designed in accordance with BS 5250⁴;
- when installed in accordance with section 10 of this BDA Agrément[®] the product will provide a convection-free envelope of high vapour resistance;
- when installed against the external side of the studs or battens a vapour control layer is required, unless a specialist advises otherwise (see section 8.2);
- when installed against the internal side of the studs or battens the product will perform as a vapour barrier and should be used in conjunction with a suitable breather membrane against the sheathing on the external side of the studs or battens, see also section 10.

5 Behaviour in relation to fire

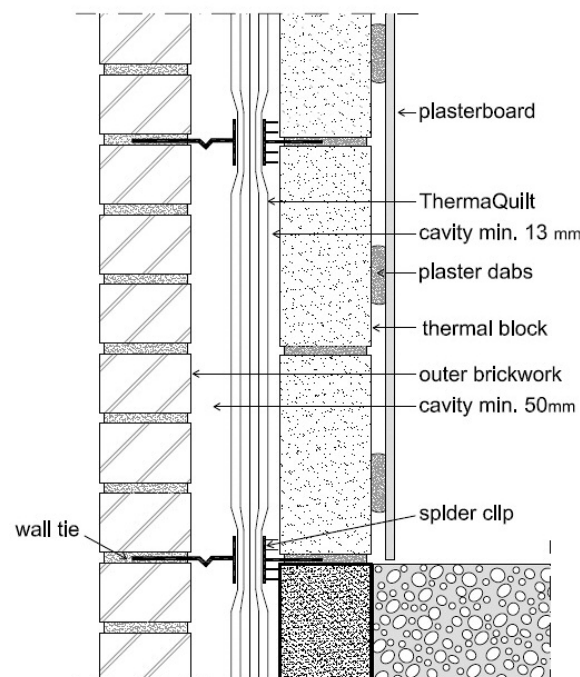
- the product does not prejudice the fire-resistance properties of the wall. Therefore, the insulation will not contribute to the development stages of a fire or present a smoke or toxic hazard;
- when properly installed, the product will not add significantly to any existing fire hazard;
- the product will be contained within the wall by the overlay until the overlay itself is destroyed. Therefore, the products will not contribute to the development stages of a fire or present a smoke or toxic hazard;
- the continuity of fire resistance must be maintained, for example as described in: England and Wales- Approved Document B, Volume 1, Sections 5.11 to 5.12; Scotland-Mandatory Standard 2.2, clause 2.2.10; Northern Ireland- Technical Booklet E, paragraph 3.21;
- the use of the product will not affect the fire rating obtained by brick or block walls when evaluated by assessment or test to BS 476-3:2004.

6 Durability

The product is stable, rot-proof and durable and will remain effective as an insulant for the life of the building in which it is installed. There is no risk for moth or beetle infestation.

9 Specific details

Figure 1 – Typical masonry cavity wall application of ThermaQuilt



9 Specific details
(continued)

Figure 2 – Typical masonry cavity wall application, with dry lining and ThermaQuilt

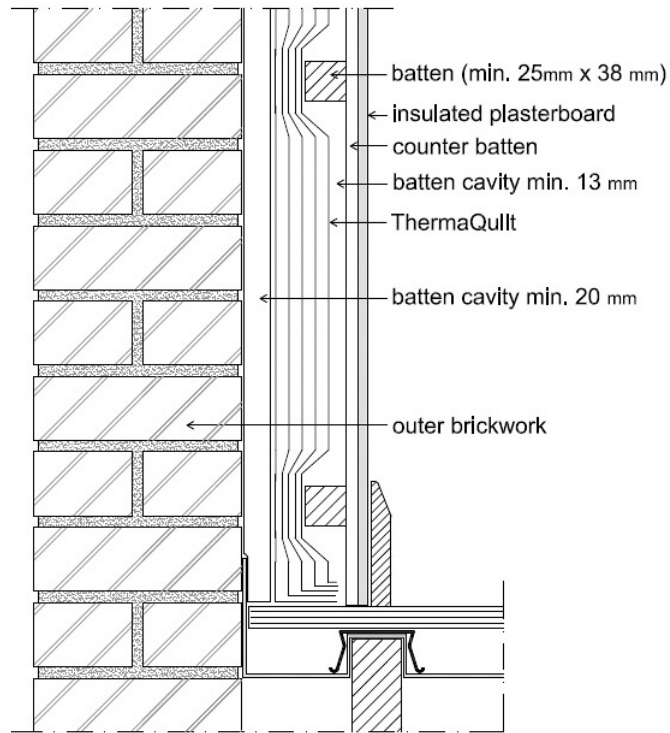
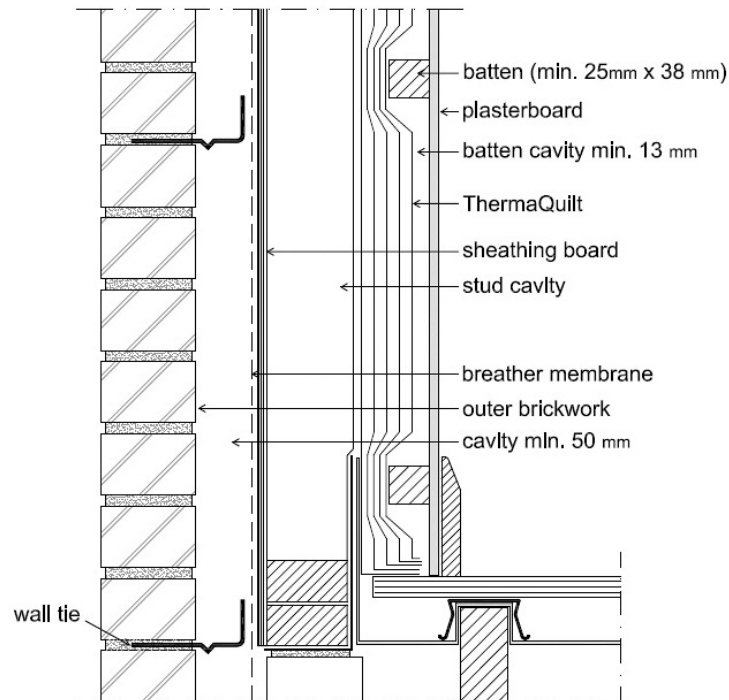
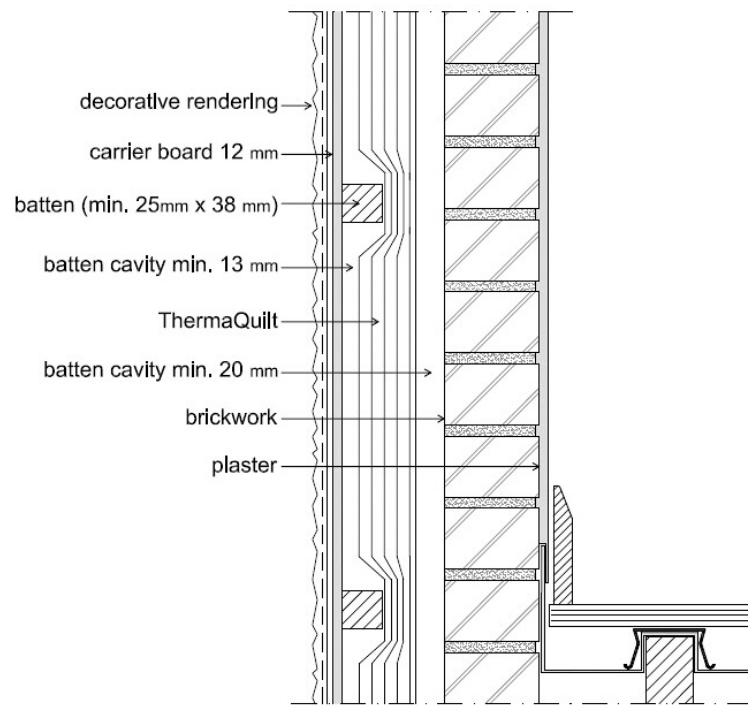


Figure 3 – Typical timber frame application of ThermaQuilt



9 Specific details
(continued)

Figure 4 – Typical external wall insulation application with ThermaQuilt



Remark: As part of the required technical consulting service (see paragraph 10.4) the Certificate holder can provide for special (cad) details, for example on openings, cavity trays, base of wall and corners.

10 Installation procedure

1 General

- installation of ThermaQuilt and additional products should be in accordance with the Certificate holder's instructions and current good building practice;
- during installation care must be taken to avoid damaging of the product; should damage occur, holes in the product should be repaired with suitable tape, as provided by the Certificate holder;
- the product should be attached to the studs and battens by using staples or nails of at least 14 mm length;
- the width of overlap joints must be at least 50 mm; the joints must be taped over the full length with suitable tape, as provided by the Certificate holder;
- when the product is cut to fit around openings or connections, gaps must be minimised; any exposed cut edges should be sealed with suitable tape, as provided by the Certificate holder.

2 Delivery and site handling

- the product is delivered to site in rolls packed in a protective bag sealed with a plastic tie; fitting instructions are placed in the bag;
- the rolls should be stored in clean, dry conditions, not exposed to sunlight;
- the product must be protected from being dropped or crushed by objects; care must be exercised when storing large quantities on site;
- the product must not be exposed to open flame or other ignition sources and must be stored away from flammable material such as paint and solvents;
- to ensure maximum performance of the product when installed, on site precautions must be taken to protect it from mud and dirt.

3 Wall insulation

Cavity wall (figure 1, section 9)

- bricks or blocks shall be installed in accordance with BS 5628³; recommendations of the brick/block manufacturer should be followed;
- the spider clips shall be fitted on to the wall tie against the inner leaf, creating the minimum cavity width between the product and the blockwork;
- the product shall be cut equal to the width of the wall plus 100 mm;
- the initial run of the product is positioned over the wall ties, ensuring that it is kept taut but with sufficient drop to below floor insulation;
- the product can be cut with a sharp blade to fit onto wall ties; the top edge of the material shall be a minimum of 75 mm over the top row of the wall ties giving a weathered lap joint.
- when a full run is in position, the retaining clip shall be fixed to the wall tie to keep the product central in the cavity;
- the outer leaf shall be built up to the topmost line of the wall ties (or two courses below) and the second run of the product installed ensuring a minimum lap of 75 mm;
- vertical joints in the product shall always be on a line of wall ties, ensuring a 100 mm lap (i.e. 50 mm on either side of the wall tie) and sealed using foil-backed tape as delivered by the Certificate holder;
- at internal and external corners a recommended air space of 25 mm shall be maintained.

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| <p>10 Installation procedure (continued)</p> <p>11 Regulations</p> | <p>Dry lining (figure 2, section 9)</p> <ul style="list-style-type: none"> - vertical counter battens (minimum 25 mm by 38 mm) shall be fixed to the wall at 400 mm centres; - battens shall always be placed at the top and bottom of the wall and around the perimeter of doors and windows; - the product shall be applied directly from the roll either vertically or horizontally depending on the wall height, pulled tight and stapled onto the battens at minimum 300 mm centres; - the product shall be overlapped at each joint by approximately 50 mm and stapled onto the battens, the joints shall be sealed using foil-backed tape as delivered by the Certificate holder; - counter battens shall be fixed to the wall battens through the product at 400 mm centres; - the plasterboard is fixed over the product and onto the battens. <p>Timber frame (figure 3, section 9)</p> <ul style="list-style-type: none"> - the product shall be applied directly from the roll either vertically or horizontally depending on the wall height, pulled tight and stapled onto the timber studs at minimum 300 mm centres; - the product shall be overlapped at each joint by approximately 50 mm and stapled onto the studs, the joints shall be sealed using foil-backed tape as delivered by the Certificate holder; - perpendicular counter battens (recommended 25 mm by 38 mm) are fixed to the studs; battens shall always be placed at the top and bottom of the wall and around the perimeter of doors and windows; - the plasterboard is fixed over the product and onto the battens. <p>Remark: the void within the stud zone may be filled with additional insulation.</p> <p>External render insulation (figure 4, section 9)</p> <ul style="list-style-type: none"> - all timber exposed to the outer cavity, except naturally durable species, shall be treated in accordance with NHBC Standards, Chapter 2.3 'Timber preservation (natural solid timber)¹²; - the product shall be applied directly from the roll either vertically or horizontally depending on the wall height, pulled tight and stapled onto the timber battens at minimum 300 mm centres; - the product shall be overlapped at each joint by approximately 50 mm and stapled onto the battens, the joints shall be sealed using foil-backed tape as delivered by the Certificate holder; - perpendicular counter battens (recommended 25 mm by 38 mm) are fixed to the vertical battens; battens shall always be placed at the top and bottom of the wall and around the perimeter of doors and windows; - the carrier board is fixed over the product and onto the battens; - the external rendered finishing shall comply with BS EN 13914-1²⁰. <p>4 Maintenance and repair</p> <ul style="list-style-type: none"> - once installed, the product does not require any maintenance, provided that it remains installed strictly in accordance with the requirements of this Certificate and of the Certificate holder; - the Certificate holder must continue to provide a technical consulting service, such as but not limited to special (cad) details. <p>1 Requirements: The Building Regulations (England and Wales) (as amended)</p> <ul style="list-style-type: none"> - B3(4) Internal fire spread (structure) - combustible materials are permitted by the regulation; - C4 Resistance to weather and ground moisture - ThermaQuilt can adequately resist the passage of moisture, provided the wall is constructed in accordance with BS 5268-2², BS 5268-5¹⁸, BS 5628-3³, BS 8212¹⁹ and Section 10 of this Certificate; - L1 Conservation of fuel and power - masonry and/or timber frame or discontinuous weather resistant cladding external cavity walls constructed using ThermaQuilt can be designed and constructed to provide a U-value of no greater than 0.30 W.m⁻²K⁻¹; The product, when used in masonry and/or timber frame or discontinuous weather resistant cladding external cavity walls, can contribute to a building meeting the Target Emission Rate; - Regulation 7 Materials and workmanship - ThermaQuilt is manufactured from suitably safe and durable materials for their application and can be installed to give a satisfactory performance. <p>Requirements: The Building (Scotland) Regulations (as amended)</p> <p>2.1 Regulations 8 (1) Durability of materials and workmanship</p> <ul style="list-style-type: none"> - ThermaQuilt is manufactured from acceptable materials and are considered to be adequately resistant to deterioration and wear under normal service conditions, provided they are installed in accordance with the requirements of this Certificate. <p>2.2 Regulation 9 Building Standards Construction</p> <p>Section 2 Fire</p> <ul style="list-style-type: none"> - 2.4 cavity barriers - combustible materials are permitted in the cavity but require any opening to be sealed; - 2.5 Heat-producing, solid fuel burning or oil- or gas-fired installations - a wall, incorporating ThermaQuilt can be designed and constructed to comply with these Standards, provided that they are isolated from the flue of a gas-fired, or solid fuel, or oil-fired heat-producing appliance by a separation. The insulation must be adequately separated from a fire place opening, recess, hearth or flue pipe, or from any heat-producing appliance. <p>Section 3 Environment</p> <ul style="list-style-type: none"> - 3.10 Precipitation - ThermaQuilt can adequately resist the passage of moisture provided the wall is constructed in accordance with BS 5268-2², BS 5268-5¹⁸, BS 5628-3³, BS 8212¹⁹ and Section 10 of this Certificate; - 3.15 Condensation - a wall formed using ThermaQuilt in accordance with the requirements of Section 10 of this Certificate and of BS 5250⁴, can be designed and constructed to comply with these Standards. | |
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